

A method of spraying flat sheet-like material and apparatus for performing the same

Patent Number: GB835670
Publication date: 1960-05-25
Inventor(s): ZAPP GUSTAV
Applicant(s): TROCKENTECHNIK G M B H
Requested Patent: ☒ GB835670
Application Number: GB19580029001 19580910
Priority Number(s): GB19580029001 19580910
IPC Classification:
EC Classification: B05B13/04B
Equivalents:

Abstract

In a spraying system, particularly for the spraying of flat extended pieces of material having an irregularly contoured edge, e.g. hides, the operation of each of a number of spray guns is controlled by an associated photo-electric cell sensitive to the presence of the material. The material 2, Fig. 1, arranged on the conveyer belt 1 made of wire mesh or netting, moves beneath the spider ring 4 which has a diameter greater than the width of the material being sprayed and which is mounted for rotation about the spindle 3. The spider supports the spray guns 6 and preceding each gun in the direction of rotation of the spider are the photo-cells 7, one being associated with each gun. Co-operating with each cell is a light source directing light downwards towards the moving belt. When each cell commences its sweep over the material, the light reflected by the material produces a signal in the photo-cell which switches on the associated gun, on moving off the material the absence of reflected light switches off the gun. In a second arrangement another ring is mounted below the first ring and the material to be sprayed is conveyed between the ring planes. The rings rotate in synchronism, the lower ring has a number of light sources mounted thereon, one source being associated with each cell of the upper ring.

Data supplied from the esp@cenet database - I2

PATENT SPECIFICATION

DRAWINGS ATTACHED

Inventor: GUSTAV ZAPP

835.670



Date of Application and filing Complete Specification: Sept. 10, 1958.

No. 29001/58.

Complete Specification Published: May 25, 1960.

Index at acceptance:—Classes 40(3), A5F(6:8); and 95, B2H.

International Classification:—B05. G08c.

COMPLETE SPECIFICATION

A method of Spraying Flat Sheet-like Material and Apparatus for Performing the same

5 We, TROCKENTECHNIK G.M.B.H., of Feld-
strasse 51, Homberg/Niederrhein, Germany,
a German Company, do hereby declare the
invention, for which we pray that a patent may
be granted to us, and the method by which it
is to be performed, to be particularly described
in and by the following statement:—

10 This invention relates to a method of spray-
ing flat sheet-like material, especially material
with an irregularly contoured edge such as
pieces of leather, and to apparatus for carry-
ing out the method.

15 One known method of spraying flat sheet-
like material conveyed in continuous motion
on horizontal conveyor means is from spray
guns which are moved to and fro across the
direction of travel of the material, the to and
fro movement of the sprayers being either
20 along a linear or an arcuate path. Another
known method of moving the spray guns is to
fit a spray gun to the end of each arm of a
four-armed spider and to rotate the spider
about a vertical fulcrum. In this form of con-
struction the spray guns travel beyond the edge
25 of the sprayed material or beyond the edge
of the travelling belt which conveys the sprayed
material. The direction of motion of the
spray guns thus reverses outside the perimeter
of the sprayed material or outside the surface
30 of the conveyor. During this period of reversal
spraying is stopped, the dye admission valve or
the air admission valve on the relative spray
gun being closed. This action is controlled by
a cam disc which actuates a mechanically oper-
35 able valve or by switch means which actuate
a solenoid-operable valve. The position of
the cams on the cam disc is adjustable to per-
mit the stopping and starting of the spray-
ing action by the gun to be adjusted to the
40 width of the article that is to be sprayed.
The purpose of adjusting the width of the
sprayed area is to economise in the expenditure
of spraying medium. For spraying articles of
uniform or substantially uniform width the de-

scribed devices are adequate. However, when 45
spraying articles of irregular size, such as ani-
mal skins, the apparatus must be adjusted to
cover the width of the largest skin, so that in
the case of those skins which have a width less
than this maximum considerable quantities of 50
dye will still go to waste.

The present invention overcomes this disad-
vantage by means of a method for control-
ling the spraying of flat-sheet like materials to
be sprayed, such as leather, sheets of metal, or 55
the like, which are moved on horizontally mov-
ing conveyor means and with spray-guns so
controlled by means of photo-electric cells that
the spray-guns, which move along a circular
path, are controlled by means of photo-elec- 60
tric cells which move along this same path.
This has the advantage that from time to time
only as much sprayed material is used, as cor-
responds to the width of the particular mater- 65
ial to be sprayed. Since a certain period of
time will elapse between the instant the
sprayed medium leaves the gun and the in-
stant it reaches the surface, the photocells are
arranged to precede the spray guns in the 70
direction of travel of the guns and to move
at the same speed as the spray guns.

The apparatus for performing the inven-
tion comprises a revolving spider or ring to
which the spray guns and the associated photo-
electric cells are both attached. To allow for 75
the delay between the instant the photo-electric
cells generate a pulse and the instant the
sprayed medium impinges upon the surfaces in
the plane of the belt as well as for the deflec-
tion of the sprayed jet due to the rotary motion 80
the photo-electric cells are adjustably mounted
on the ring in relation to the spray guns at
the end of the arms of the spider in such man-
ner that they precede the spray guns in the
direction of revolution. A light source may be 85
associated with the photo-electric cells on the
ring for illuminating the sprayed material in
such manner that the reflected light will pro-

[Price 3s. 6d.]

duce the pulse in the photo-electric cells. In an alternative form of construction a second rotatable ring may be associated with the first-mentioned ring which carries the spray guns and the photo-electric cells, said second ring being equipped with mirrors or light sources, and the travelling material being moved between the two rings in spaced relationship thereto. The two rings rotate synchronously and the mirrors or light sources affixed to the second rotary ring are fitted in positions corresponding with the positions of the photo-electric cells on the first ring.

Illustrative forms of construction of apparatus for performing the invention are shown in the accompanying drawings in which

Fig. 1 is a diagrammatic view of apparatus according to the invention comprising a rotating ring which carries four spray guns and four associated photo-electric cells, and

Fig. 2 is a similar type of apparatus excepting that a second ring is associated with the first rotating ring.

The sprayed article 2, in the illustrated example a piece of leather, is conveyed in the direction of the arrow on a conveyor belt 1. Arranged above the conveyor belt is a spider 4 adapted to revolve about a pivot 3, the ends of the arms of the spider being connected by a ring 5. Preferably equidistantly disposed on the ring are spray guns 6. The supply of spraying medium and the admission of the required compressed air to the spray guns is effected in a manner already well known and not shown in the drawing. The spider 4 with its ring 5 revolves about the pivot 3 in the direction indicated by the arrow. Preceding the spray guns 6 in the direction of rotation photo-electric cells 7 are adjustably secured to the ring. In the illustrated example according to Fig. 1 the photocells are equipped with a light source which is not shown in the drawing. The light illuminates the sprayed article 2 and is reflected thereby to the relative photo-electric cell. Conveniently the conveyor belt 1 consists of a wire mesh or net material to provide a satisfactory amount of contrast between the belt and the sprayed article. It will be readily understood that instead of associating a separate light source with each of the photo-electric cells a single brighter source of light might be provided above the entire apparatus, which would then produce the same effect on the photo-electric cells as the several individual lights. When the spider 4 and the ring 5 are rotated the light reflected by the sprayed article enters the photo-electric cells whenever these are situated above the article. The pulse which starts up the relative spray gun is thereby produced. As soon as the photo-electric cells move outside the area above the sprayed article they cease to be illuminated by the reflected light and thus cause the relative spray gun to stop spraying.

To ensure that the photo-electric cells oper-

ate as required a cleaning device 8, consisting for instance of a rotating brush, is arranged to project into the photo-electric cell path. This brush serves to remove any particles of mist that may settle on the photo-electric cells during the process of spraying.

In the embodiment illustrated in Fig. 2 a second rotating ring 9 is arranged below the travelling belt 1, said ring revolving in synchronism with the first rotating ring 5. Light sources 10 are provided on ring 9 and these are spaced and arranged in a manner which corresponds with the spacing and positions of the photocells 7. A second cleaning brush 11 is provided to keep the light sources clean. When the two rings 5 and 9 rotate, the beam emanating from the light sources 10 is interrupted when any part of the sprayed material moves into the path of the beam. When light sources 10 and photo-electric cells 7 reach points outside the area of the sprayed material the beam from the light source 10 will reach the relative photo-electric cell which generates a pulse whereby the associated spray gun is shut off. Instead of with light sources 10, the second ring 9 may be fitted with mirrors which reflect a beam emanating from a light source fitted to the photo-electric cells in such manner that the beam will be directed to the photo-electric cell.

WHAT WE CLAIM IS:—

1. A method of controlling with the aid of photo-electric cells the spraying by means of spray guns of flat extended pieces of material, such as of pieces of leather, sheets of metal, or the like, conveyed in continuous motion on horizontal conveyor means, characterised in that the spray guns move around a circular path and are controlled by photo-electric cells which move along the same circular path.

2. Method according to Claim 1, characterised in that the photo-electric cells move at the same speed as the spray guns but precede them in the direction of rotation.

3. Apparatus for performing the method claimed in Claims 1 and 2, characterised in that the spray guns and the associated photo-electric cells are mounted on a rotating spider or ring.

4. Apparatus according to Claim 3, characterised in that the photo-electric cells are adjustable in relation to the spray guns in the direction of rotation of the rotating spider or ring.

5. Apparatus according to Claims 3 and 4, characterised in that there is associated with the rotating spider or ring which carries the spray guns and photo-electric cells a second rotating spider or ring which carries mirrors or light sources in such manner that the sprayed material travels between the two spiders or rings in spaced relationship thereto.

6. Apparatus according to Claim 5, characterised in that the two rotary rings revolve in synchronism.

Fig. 1

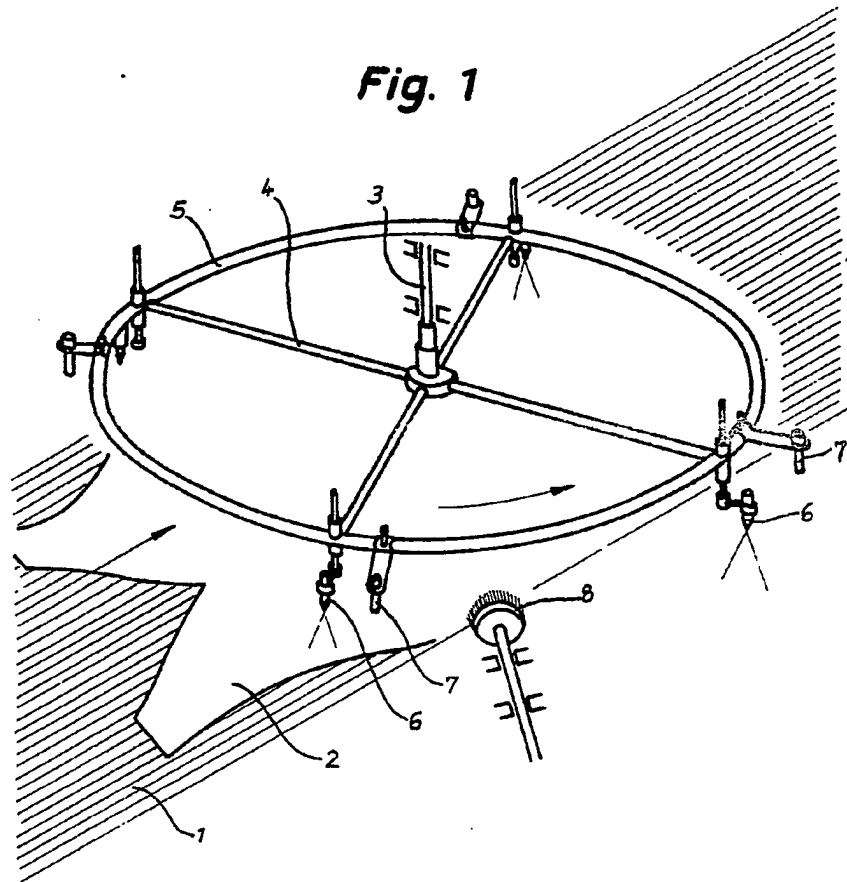


Fig. 2

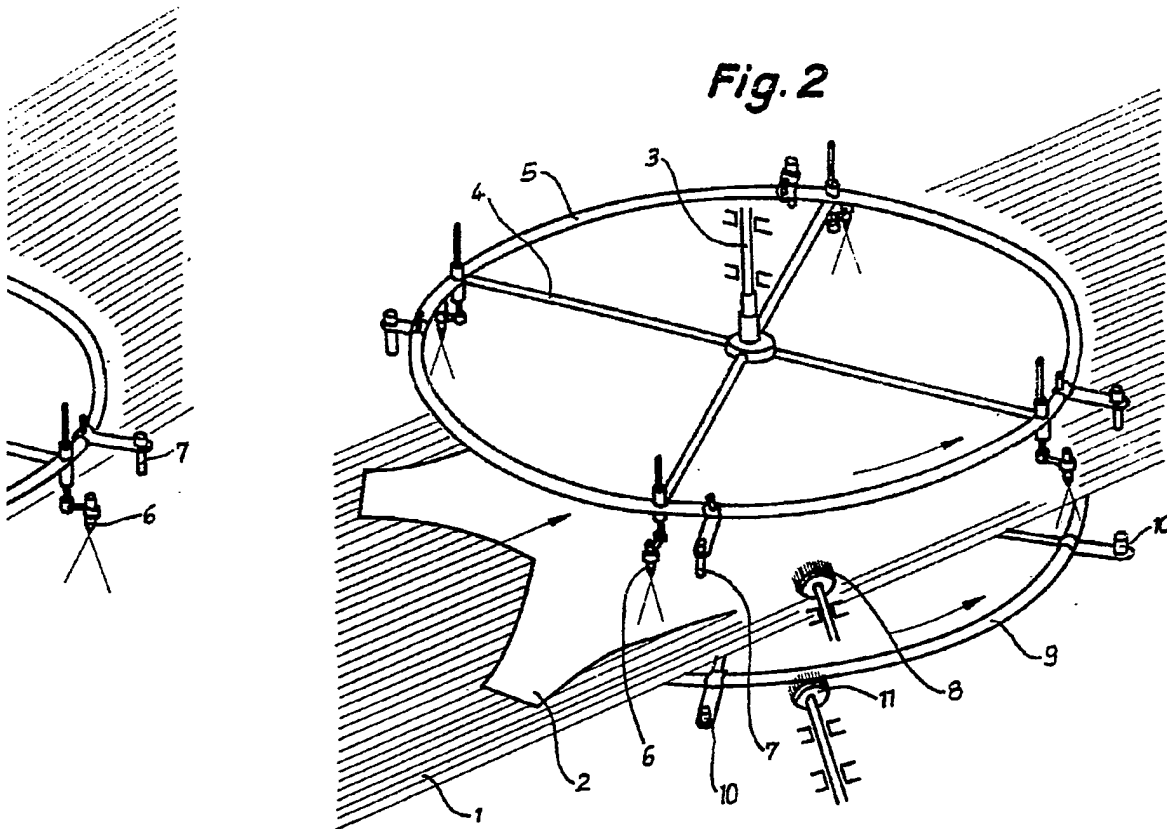


Fig. 1

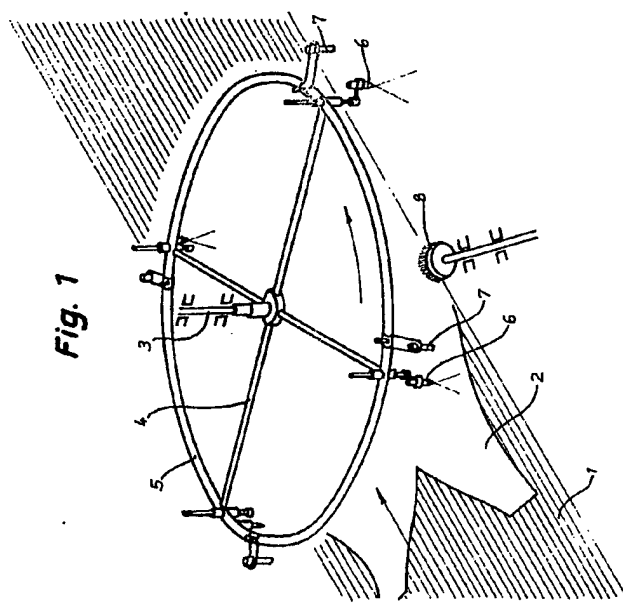


Fig. 2

